

What is claimed is:

1. An antireflective coating composition for use with an overcoated photoresist composition, the antireflective composition comprising 1) a resin binder, 2) an acid or thermal acid generator, and 3) a photoacid generator compound.

2. The antireflective composition of claim 1 wherein the photoacid generator compound is substantially stable upon exposure to temperatures of from about 110 to 175°C for at least about 1 minute.

3. The antireflective composition of claim 1 wherein the photoacid generator compound generates acid upon exposure to an effective amount of deep UV radiation.

4. The antireflective composition of claim 1 wherein the resin binder comprises anthracenyl units.

5. The antireflective composition of claim 1 further comprising a crosslinker.

6. The antireflective composition of claim 5 wherein the crosslinker is an amine-based material.

7. A coated substrate comprising:
a substrate having thereon

- 1) a coating layer of an antireflective composition of claim 1; and
- 2) a coating layer of a photoresist.

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8. The coated substrate of claim 7 wherein the photoresist is coated over the antireflective layer.

9. The coated substrate of claim 7 wherein the photoresist is a chemically-amplified positive-acting photoresist that comprises a resin binder and a photoacid generator compound.

10. The coated substrate of claim 7 wherein the antireflective composition photoacid generator compound and the photoresist photoacid generator compound each generate substantially the same acid compound upon exposure to activating radiation.

11. The coated substrate of claim 7 wherein the antireflective composition photoacid generator compound and the photoresist photoacid generator compound each generate the same acid compound upon exposure to activating radiation.

12. The coated substrate of claim 11 wherein the antireflective composition photoacid generator compound and the photoresist photoacid generator compound each generate a sulfonate acid upon exposure to activating radiation.

13. The coated substrate of claim 8 wherein the substrate is a microelectronic wafer, a flat panel display substrate or an optical-electronic substrate.

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14. A coated substrate comprising:
a substrate having thereon

- 1) a coating layer of an antireflective composition comprising a resin binder, and a photoacid generator compound, the antireflective composition essentially free of a crosslinker component; and
- 2) a coating layer of a photoresist.

15. A method for forming a photoresist relief image comprising:

- (a) applying on a substrate a layer of an antireflective composition comprising a photoacid generator compound;
- (b) applying a layer of a photoresist composition over the antireflective composition layer;
- (c) exposing the photoresist layer to activating radiation whereby the photoacid generator of the antireflective composition generates acid; and
- (d) developing the exposed photoresist layer.

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17. The method of claim 16 wherein the antireflective layer is thermally cured prior to applying the photoresist composition layer.

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18. The method of claim 17 wherein the photoacid generator of the antireflective composition is not substantially activated during the thermal cure of the antireflective layer.

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19. The method of claim 16 wherein said exposing of the photoresist layer defines a latent relief image in the photoresist layer.

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20. The method of claim 16 wherein the antireflective composition layer is not exposed to radiation activating for the photoacid generator prior to the exposing of the photoresist layer to activating radiation.

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